

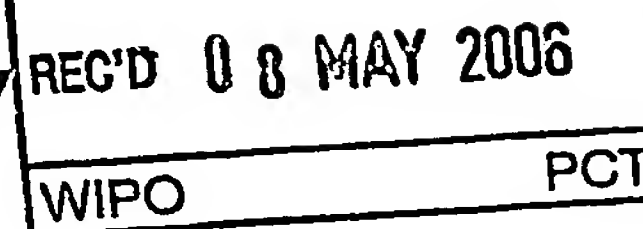
PATENT COOPERATION TREATY


PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference SCB 894 PCT		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/013582		International filing date (day/month/year) 30.11.2004		Priority date (day/month/year) 05.12.2003
International Patent Classification (IPC) or national classification and IPC INV. A23L1/03 A23L1/30 C12R1/225 C12N1/20 C12R1/23				
Applicant CONSIGLIO NAZIONALE DELLE RICERCHE				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i>) a total of 8 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 06.09.2005		Date of completion of this report 05.05.2006		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Couzy, F Telephone No. +49 89 2399-7503		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/013582

Box No. 1 Basis of the report

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-14 as originally filed

Claims, Numbers

1-7 filed with telefax on 06.09.2005

Drawings, Sheets

1-4 as originally filed

- ☒ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/013582

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3-4,6,7
	No: Claims	1,2, 5
Inventive step (IS)	Yes: Claims	3-4,6-7
	No: Claims	1,2,5
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/013582

Supplemental Box relating to Sequence Listing

Continuation of Box I, item 2:

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this report was established on the basis of:

a. type of material:

- ☒ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material:

- ☒ on paper
- ☐ in electronic form

c. time of filing/furnishing:

- ☐ contained in the international application as filed
- ☐ filed together with the international application in electronic form
- ☐ furnished subsequently to this Authority for the purposes of search and/or examination
- ☒ received by this Authority as an amendment* on 06.09.2005

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

* If item 4 in Box No. 1 applies, the listing and/or table(s) related thereto, which form part of the basis of the report, may be marked "superseded."

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

V.1 Reference is made to the following documents:

- D1: WO 02/056695 A (CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS)
25 July 2002
- D2: WO 00/60948 A (CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS;
JIMENEZ DIAZ, RUFINO;) 19 October 2000
- D3: VAN DEN BERG DJC, ET AL: "Isolation, screening and identification of lactic acid
bacteria from traditional food fermentation processes and culture collections" FOOD
BIOTECHNOLOGY, vol. 7, no. 3, 1993, pages 189-205, XP009046122
- D4: SUSKOVIC J ET AL: "Probiotic properties of Lactobacillus plantarum L4" FOOD
TECHNOL. BIOTECHNOL., vol. 35, no. 2, 1997, pages 107-112, XP009046128
- D5: WO 97/49303 A (QUEST INTERNATIONAL B.V; HEIJMEN, VINCENT, H., M;
HOOGLAND, MARTIN; KE) 31 December 1997
- D6: US-A-3 891 771 (GREEN ET AL) 24 June 1975
- D7: US-A-5 603 930 (BRASSART ET AL) 18 February 1997
- D8: EP-A-1 308 506 (EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH) 7
May 2003

V.2 Novelty and inventive step

V.2.1 Documents D1, D2, and D4 disclose that vegetables such as olives can be fermented with *Lactobacillus plantarum* strains. Since these strains are comprised within the species mentioned under claim 1, they must also adhere to the pericarp. Further, it is obvious that when olives naturally contain germs such as *Lactobacilli* or *Bifidobacteria*, and more specifically *Lactobacillus paracasei* as revealed by D3 (see e.g., the sentence bridging pages 189 and 190 of D3), these germs must be present on the pericarp. **Another point is that since they are the same species as those mentioned in claims 1-2, it must be assumed that these have probiotic activities.** As a result, the subject-matter of claims 1, 2 and 5 is **not** considered new at the present stage (Art. 33 (2) PCT).

V.2.2 None of the prior art documents however discloses nor suggests to use the specific strains mentioned in claims 3 and 4, which have both technological and documented probiotic properties. The closest prior art may be considered to be D4 and D7, which suggest other strains but do not teach that they may be suitable for use with olives. Thus, the subject-matter of these claims is both novel and involves an inventive step (Art. 33 (2-3) PCT).

V.2.3 Similarly, the prior art closest to claim 7 may again be considered to be D4 and D7. these suggest other strains but do not teach that they may be suitable for use with olives. Thus, they do not lead the skilled person to the claimed strain, and the subject-matter of said claim 7 is considered to be both novel and to involve an inventive step (Art. 33 (2-3) PCT).

V.2.4 None of these documents teaches nor suggest to apply a probiotic to olives by coating. Thus, the subject-matter of independent claim 6 is new and involves an inventive step (Art. 33 (2-3) PCT).

V.2.5 The most relevant passages of the above cited documents are those mentioned in the International search Report, to which the reader is referred.

V.3 The subject-matter of all claims is industrially applicable (Art. 33 (4) PCT).

CLAIMS

1. Table olives characterised in that they contain ^{probiotic} lactobacilli and/or bifidobacteria adhering on the pericarp.
- 5 2. Olives according to claim 1 characterised in that the lactobacilli are selected from *Lactobacillus rhamnosus* and *L. paracasei* and the bifidobacteria are selected from *Bifidobacterium bifidum* and *B. longum*.
- 10 3. Table olives according to claim 2 characterised in that the lactobacilli are selected from: *Lactobacillus rhamnosus* GG ATCC53103; *L. rhamnosus* IMPC 11; *L. rhamnosus* IMPC 19; *Lactobacillus paracasei* LMG P-22043; *Lactobacillus paracasei* IMPC 4.1 and that the bifidobacteria are selected from *Bifidobacterium bifidum* ATCC15696 and *Bifidobacterium longum* ATCC15708.
- 15 4. Table olives according to claim 3 characterised in that the lactobacilli belong to the strain *Lactobacillus paracasei* deposited with the Belgian Coordinated Collections of Microorganisms under accession number LMG P-22043.
5. Probiotic food products comprising the table olives of any one of claims 1-4.
- 20 6. Use of lactobacilli and bifidobacteria to coat the pericarp of table olives.
7. *Lactobacillus paracasei* deposited with the Belgian Coordinated Collections of Microorganisms under accession number LMG P-22043.

**BELGIAN COORDINATED COLLECTIONS OF MICROORGANISMS – BCCM/
LMG COLLECTION**

Page 1 of Form BCCM/LMG/BP/4/..... 03-160 Receipt in the case of an original deposit

**Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the
Purposes of Patent Procedure**

**Receipt in the case of an original deposit issued pursuant to Rule 7.1 by the International
Depositary Authority BCCM/LMG Identified at the bottom of next page**

International Form BCCM/LMG/BP/4/..... 03-160

To: Name of the depositor : P. Lavernicocca

Address : Institute of Sciences of Food Production (ISPA)
National Research Council (CNR)
V.le L. Einaudi 51
I-70125 Bari
Italy

I. Identification of the microorganism:

I.1 Identification reference given by the depositor:

IMPC 2.1

I.2 Accession number given by the International Depositary Authority:

LMG P-22043

**BELGIAN COORDINATED COLLECTIONS OF MICROORGANISMS - BCCM/
LMG COLLECTION**

Page 2 of Form BCCM/LMG/BP/4/..... 03-160 Receipt in the case of an original deposit

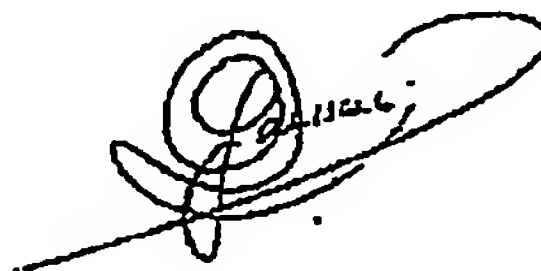
II. Scientific description an/or proposed taxonomic designation

The microorganism identified under I above was accompanied by :

(mark with a cross the applicable box(es))

☒ a scientific description☒ a proposed taxonomic designation**III. Receipt and acceptance**This International Depositary Authority accepts the microorganism identified under I above,
which was received by it on (date of original deposit):

October 3, 2003

IV. International Depositary AuthorityBelgian Coordinated Collections of Microorganisms (BCCM)
Laboratorium voor Microbiologie - Bacteriënverzameling (LMG)
Universiteit Gent
K.L. Ledeganckstraat 35
B-9000 Gent, BelgiumSignature(s) of person(s) having the power to represent the International Depositary Authority
or of authorized official(s) :

Dr. D. Janssens, curator IDA

Date:

October 30, 2003

**BELGIAN COORDINATED COLLECTIONS OF MICROORGANISMS - BCCM/
LMG COLLECTION**

Page 1 of Form BCCM/LMG/BP/9/..... 03-160 Viability statement

**Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the
Purposes of Patent Procedure**

**Viability statement issued pursuant to Rule 10.2 by the International Depositary Authority
BCCM/LMG identified on the following page**

International Form BCCM/LMG/BP/9/... 03-160

To: Party to whom the viability statement is issued

Name : P. Lavernicocca
Address : Institute of Sciences of Food Production (ISPA)
National Research Council (CNR)
V.le L. Einaudi 51
I-70125 Bari
Italy

I. Depositor

I.1 Name : P. Lavernicocca
I.2 Address : Institute of Sciences of Food Production (ISPA)
National Research Council (CNR)
V.le L. Einaudi 51
I-70125 Bari
Italy

II. Identification of the microorganism

II.1 Accession number given by the International Depositary Authority:

LMG P-22043

II.2 Date of the original deposit (or where a new deposit or a transfer has been made, the
most recent relevant date):

October 3, 2003

III. Viability statement

The viability of the microorganism identified under II above was tested on:
(Give date. In the cases referred to in Rule 10.2(a)(ii) and (iii), refer to the most recent viability test).

October 3, 2003

On that date, the said microorganism was : (mark the applicable box with a cross)

☒ viable
☐ no longer viable

inted: 07/03/2006

FAX +39 02783070

CLMSPAMD

EP 04803365

**BELGIAN COORDINATED COLLECTIONS OF MICROORGANISMS - BCCM/
LMG COLLECTION**
Page 2 of Form BCCM/LMG/BP/9/.....03-160..... Viability statement

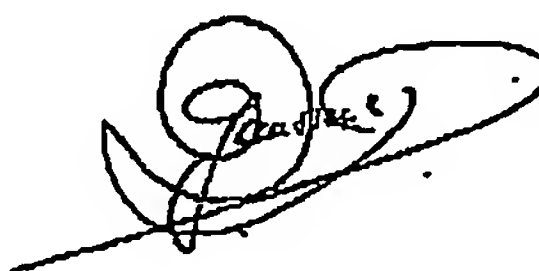
IV.. Conditions under which the viability test has been performed:

(Fill in if the information has been requested and if the results of the test were negative).

V. . International Depositary Authority

Belgian Coordinated Collections of Microorganisms (BCCM)
Laboratorium voor Microbiologie - Bacteriënverzameling (LMG)
Universiteit Gent
K.L. Ledeganckstraat 35
B-9000 Gent, Belgium

Signature(s) of person(s) having the power to represent the International Depositary Authority
or of authorized official(s) :



Dr. D. Janssens, curator IDA

Date:

October 30, 2003

**BELGIAN COORDINATED COLLECTIONS OF MICROORGANISMS
BCCM/LMG-COLLECTION**

Contract BCCM/LMG/DBT1/.....03-160 in the case of an original deposit or in the case of a new deposit with another International Depositary Authority.

Budapest Treaty of 28 April 1977 on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure.

Contract in the case of an original deposit or in the case of a new deposit with another International Depositary Authority.

Contract BCCM/LMG/DBT1/.....03-160 (number to be filled in by IDA)

Send to:

Belgian Coordinated Collections of Microorganisms (BCCM)
Laboratorium voor Microbiologie - Bacteriënverzameling (LMG)
Universiteit Gent
K.L. Ledeganckstraat 35
B-9000 Gent, Belgium

Between the Belgian Coordinated Collections of Microorganisms - BCCM,
represented by:

Laboratorium voor Microbiologie - Bacteriënverzameling (LMG)
Universiteit Gent
K.L. Ledeganckstraat 35
B-9000 Gent, Belgium
called hereafter "BCCM/LMG"

and

the "Depositor" identified at the bottom of this form

It is agreed that if BCCM/LMG accepts the deposit under the Budapest Treaty of the microorganism with the following identification reference, by sending to the depositor the signed form BCCM/LMG/DBT2/.....03-160 which completes the procedure,

(Indicate here below number, symbols, etc. given to the microorganism by the depositor)

Lactobacillus paracasei

IMPC 2.1

1. The depositor knows and will observe all the provisions of the Budapest Treaty of 28 April 1977 on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure and the Regulations under the Treaty and, more specifically, that he:

BCCM / LMG / DBT1 / 03-160

PAGE 2/3

- a) will provide all necessary information requested by BCCM/LMG, especially the information found on form BCCM/LMG/BP/1 in the case of an original deposit and form BCCM/LMG/BP/3 in the case of a new deposit;
- b) will pay all necessary fees;
- c) will not withdraw the deposit for the period specified in Rule 9.1;
- d) authorizes BCCM/LMG to furnish samples according to the applicable patent requirements;
- e) will make a new deposit in the event of BCCM/LMG being unable to furnish samples;

2. The depositor will not hold BCCM/LMG or the Belgian federal office for scientific, technical and cultural affairs responsible for any deterioration of samples during storage when all precautions indicated by him in respect of storage have been taken by BCCM/LMG;

3. The depositor will compensate BCCM/LMG for any damage it may sustain as a consequence of dealing with the organism when all precautions indicated by him in respect of dealing with the organism have been taken by BCCM/LMG;

4. The depositor will indemnify BCCM/LMG against any action brought against it as a consequence of the release of samples, unless such action results from negligence on the part of BCCM/LMG.

Any dispute that may arise shall be governed by Belgian law. Only the courts in the Brussels juridical district shall be competent.

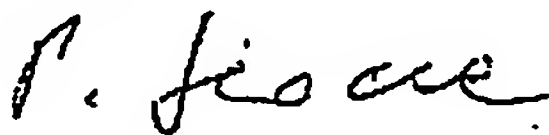
The depositor:

(In the case of a private company, give: full registered name, legal status and address of the registered office)

Name: Paola Lavernicocca

Address: Institute of Sciences of Food Production (ISPA), CNR, Viale Einaudi 51, 70125 Bari, Italy

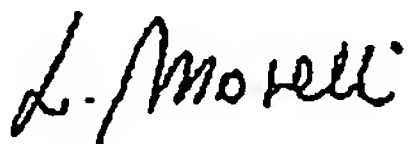
Signature:



Name: Lorenzo Morelli

Address: Istituto di Microbiologia, Università Cattolica del Sacro Cuore, Piacenza - Via Emilia Parmense, 84, 29100 Piacenza - Italy

Signature:



Date: 29/09/2003

(Where the signature is required on behalf of a legal entity, the typewritten name(s) of the natural

BCCM/LMG/DAT/03-160

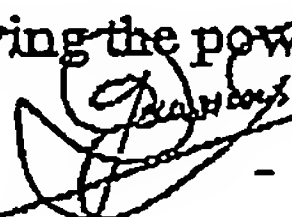
PAGE 3/5

person(s) signing on behalf of the legal entity should accompany the signature(s)).

Belgian Coordinated Collections of Microorganisms (BCCM)
Laboratorium voor Microbiologie - Bacteriënverzameling (LMG)
Universiteit Gent
K.L. Ledeganckstraat 35
B-9000 Gent, Belgium

Signature(s) of person(s) having the power to represent the International Depositary Authority or of
authorized official(s):

Date: October 30, 2003

 J. TANSSENS